

Promoting Academic Motivation and Self-Regulation: Practical Guidelines for Online Instructors*

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Abstract: Learning on the Web requires considerable self-direction (Hartley & Bendixen, 2001; Valenta, Therriault, Dieter, & Mrtek, 2001). In fact, several scholars (e.g., Dabbagh & Bannan-Ritland, 2005; Dabbagh & Kitsantas, 2004; Moore & Kearsley, 2005) have argued that online learners—to an even greater degree than traditional classroom students—require motivation and self-regulation to stay engaged, guide their cognition, and regulate their effort. The purpose of this article is to provide a summary of several key findings from recent empirical studies that used social cognitive views of self-regulation to understand the characteristics of successful online learners. Following each finding are practical, empirically-based guidelines that have emerged from these studies. Ultimately, this article encourages online teachers to consider and explicitly address their learners' academic motivation and self-regulation as they strive to provide engaging and effective online instruction.

Over the last decade, online learning has emerged as an increasingly popular alternative to traditional classroom instruction (Larreamendy-Joerns & Leinhardt, 2006; Tallent-Runnels et al., 2006). For example, a recent survey of 2,500 U.S. colleges and universities by the Sloan Consortium found that the number of degree-granting institutions offering online courses more than doubled from 1.6 million in 2002 to 3.5 million in 2006 (Allen & Seaman, 2007). Likewise, the U.S. military has recognized the utility of online learning. In particular, the U.S. Department of Defense recently created the Advanced Distributed Learning initiative, a program intended to make education and training available to the military's more than three million personnel anytime, anywhere (Curda & Curda, 2003). Not surprisingly, online instruction is considered a critical component of the Advanced Distributed Learning initiative (Fletcher, Tobias, & Wisner, 2007). Finally, corporations have joined the online learning community. A recent survey of large Fortune 500 companies by the American Society for Training and Development found that the percentage of companies using computer-delivered training increased to 37% in 2005, with 60% of this training provided online (Rivera & Paradise, 2006).

Traditionally, research in the area of online learning has focused primarily on group comparisons; that is, studies which compared the attitudes and academic achievements of online learners versus traditional classroom students. Taken together, results from these investigations have generally found no statistically significant differences in various outcomes (e.g., satisfaction, continuing motivation, and achievement; Bernard et al., 2004; Phipps & Merisotis, 1999; Russell, 1999; Zhao, Lei, Yan, Lai, & Tan, 2005). Accordingly, the conclusion is that online learning can be *as effective* as its classroom counterpart (Russell, 1999; Zhao et al., 2005).

Recently, several experts in the field of online learning (Bernard et al., 2004; Dillon & Greene, 2003; Gibson, 2003) have urged researchers to move beyond group comparison studies and focus instead on the attributes of learners who perform well in online learning situations. The purpose of the present article is to briefly review recent research that has specifically addressed this recommendation to investigate learner characteristics in online settings. In particular, this article presents findings from several empirical studies that used social cognitive views of self-regulation to understand student success in online courses. More importantly, this article provides online instructors with a set of practical, empirically-based guidelines that have emerged from these studies. Ultimately, this article encourages online teachers to consider and explicitly address their learners' academic motivation and self-regulation as they strive to provide engaging and effective online instruction.

Online Learning and Self-Direction

Anyone who has ever completed an online course understands that learning on the Web requires considerable self-direction (Hartley & Bendixen, 2001; Valenta et al., 2001). Whereas teachers in traditional classrooms might normally provide students with guidance and structure, online learners are much more autonomous. As a result of this increased autonomy, online learners must take greater responsibility for the management and control of their own academic progress (Dabbagh & Bannan-Ritland, 2005; Dabbagh & Kitsantas,

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2004; Moore & Kearsley, 2005). Results from the latest Sloan Consortium survey support the idea that online learning requires student autonomy and self-direction. In 2006, academic leaders from 2,500 U.S. colleges and universities cited “students need more discipline to succeed in online courses” as the most important barrier to the widespread adoption of online learning (Allen & Seaman, 2007). Therefore, you might say that online learning, as a mode of instruction, shifts control from the instructor to the learner.

With this shift, many scholars have suggested that online students—to an even greater extent than traditional learners—must be capable of “self-regulating” their cognition, motivation, and behavior in these highly autonomous learning environments (Dabbagh & Kitsantas, 2004; Garrison, 2003; Hartley & Bendixen, 2001). Self-regulated learning, then, seems to provide a useful framework for online learning research, offering important insights into the functioning of independent learners (Lynch & Dembo, 2004; Miliadiadou & Savenye, 2003).

Theoretical Framework: Social Cognitive Self-Regulation

Self-regulated learning (SRL) refers to “learning that occurs largely from the influence of students’ self-generated thoughts, feelings, strategies, and behaviors, which are oriented toward the attainment of goals” (Schunk & Zimmerman, 1998, p. viii). Also referred to as academic self-regulation, SRL has been studied in traditional classrooms as a means of understanding how successful students adapt their cognition, motivation, and behavior to improve learning. In general, investigations have consistently found that students who hold adaptive motivational beliefs tend to use more SRL strategies and, as a result, outperform their less-adaptive counterparts (for a review, see Pintrich, 1999).

Although there are various conceptualizations of academic self-regulation (for a review, see Boekaerts, Pintrich, & Zeidner, 2000; Puustinen & Pulkkinen, 2001), several scholars have found social cognitive models of self-regulation to be particularly useful in analyzing student success in online courses (e.g., Artino, 2007b; Hodges, 2005; Miliadiadou & Savenye, 2003). Social cognitive models distinguish themselves from purely cognitive theories in that they focus on the interrelationship among learners’ beliefs and their use of self-generated learning strategies (Pintrich, 1999; Zimmerman, 2000). Moreover, social cognitive models are concerned with explaining how these personal beliefs and associated behaviors are ultimately influenced by characteristics of the learning environment (Pintrich, 2000; Zimmerman, 2000).

As a multidimensional construct that integrates cognitive, motivational, and behavioral components of learning to understand how students become masters of their own learning processes (Pintrich, 2000), social cognitive theories of self-regulation assume a broadly constructivist position (Martin, 2004). In fact, according to Pintrich (2000), the most important assumption shared by nearly all theories of academic self-regulation is the *active, constructivist assumption*. In his words, “learners are assumed to actively construct their own meanings, goals, and strategies...learners are not just passive recipients of information...but rather active, constructive meaning makers as they go about learning” (Pintrich, 2000, p. 452). A second critical assumption is that learners can potentially monitor, control, and regulate various aspects of their own cognition, motivation, and behavior, as well as features of the learning environment (Pintrich, 2000). This is not to say that learners *will* self-regulate at all times or in all learning contexts, but that monitoring, control, and regulation is at least possible. In this way, it can be said that SRL is not an all-or-nothing phenomenon. Instead, students are self-regulating to the extent that they are cognitively, motivationally, and behaviorally involved in their own learning activities (Zimmerman, 2000).

Zimmerman (2000) has described a three-phase model of self-regulation that includes *forethought*, *performance*, and *self-reflection*. Forethought involves setting goals prior to learning, activating relevant prior knowledge, and planning time and effort allocations. Performance includes monitoring one’s actions and their outcomes and attempting to control one’s cognitions, motivation, behaviors, and contextual factors during learning (Schunk, 2005). Finally, self-reflection incorporates assessment of one’s overall performance and evaluation of what changes are needed for better learning next time. During each phase, self-regulated learners combine cognitive strategies (e.g., rehearsal, elaboration, organization) with motivational beliefs (e.g., self-efficacy for learning, interest and value, and goal orientation) to control their own learning processes and achieve their goals (Pintrich, 2000; Zimmerman, 2000). In short, effective self-regulated learners are “goal-driven, motivated, independent, and metacognitively active participants in their own learning” (Azevedo, 2005, p. 202)—characteristics that make them particularly well suited to succeed in online learning environments (Dabbagh & Kitsantas, 2004; Garrison, 2003).

Literature Search Criteria

Numerous empirical studies over the last decade have utilized social cognitive theory and its perspective on motivation and self-regulation to investigate online learning. For the purposes of the present article, the publicly available literature from 1995 through 2007 was reviewed. Because the Internet has only recently become the

technology-of-choice for learning and teaching at a distance (Dabbagh & Bannan-Ritland, 2005; Moore & Kearsley, 2005; Tallent-Runnels et al., 2006), the literature search was limited to articles published after 1994.

Electronic searches were performed using various queries, including, for example, self-regulat* AND online, self-regulat* AND Web, and self-regulat* AND distance. The following databases were searched: Academic Search Premier, ERIC, PsychARTICLES, Psychology and Behavioral Sciences Collection, PsycINFO, Web of Science, and Dissertation Abstracts on ProQuest. Once located, abstracts for each study were read; articles that utilized social cognitive models of motivation and self-regulation, or components thereof, as their theoretical framework were retained and read in their entirety.

Key Findings and Instructional Implications

It is important to note that a thorough discussion of the findings from the empirical studies reviewed here is beyond the scope of this article (for a complete review, see Artino, 2007b). Instead, the present article provides only a brief summary of the key findings that emerged consistently across several studies. Following each finding is a description of the associated instructional implications for online teachers.

Finding 1: The Quality and Quantity of Students' Self-Regulatory Beliefs and Behaviors Vary Greatly; Those with More Adaptive Profiles Experience Greater Success

Self-regulated learners are generally characterized as active participants who efficiently control their own learning experiences in many different ways, including establishing a productive work environment and using resources effectively; organizing and rehearsing information to be learned; seeking help when they do not understand; and holding positive motivational beliefs about their capabilities, the value of learning, and the factors that influence learning (Schunk & Zimmerman, 1994, 1998). Recent empirical findings in online settings have confirmed that these beliefs and behaviors are indeed associated with greater academic success, including enhanced overall satisfaction (Artino, 2007a, in press; Lee, 2002; Lim, 2001), greater intentions to enroll in future online courses (Artino, 2007a, in press; Lim, 2002), and superior academic performance (Bell & Akroyd, 2006; Hsu, 1997; Joo et al., 2000; Lee, 2002; Lynch & Dembo, 2004; Wang & Newlin, 2002).

Additionally, some scholars (Greene & Azevedo, 2007; Pintrich, 2003; Schunk, Pintrich, & Meece, 2008) have suggested that there may be important developmental differences in students' academic self-regulation. For example, Greene and Azevedo (2007) have encouraged researchers to ask whether there might be a developmental progression within SRL. In their words, "research in this area would perhaps not only allow us to more clearly examine individual phenomena in SRL but also provide clues as to how good SRL behaviors might be taught" (Greene & Azevedo, 2007, p. 364).

Results from several studies of both traditional and online learners (e.g., Artino & Stephens, 2007; Justice & Dornan, 2001; Niemi, Nevgi, & Virtanen, 2003; Richardson & Newby, 2006; Williams & Hellman, 2004) have supported the hypothesis that there are developmental differences in students' self-regulatory beliefs and behaviors. For instance, Artino and Stephens (2007) surveyed 82 university students and found that graduate students enrolled in an online course reported greater use of critical thinking strategies and lower levels of procrastination than undergraduates enrolled in similar courses. Likewise, in a study of graduate students' cognitive engagement in engineering- and education-based online programs, Richardson and Newby (2006) found that younger students were more likely to use surface processing strategies (i.e., limit cognitive engagement to the bare essentials and use rote memorization to learn) and surface motives (i.e., meet requirements minimally), rather than more adaptive, deep processing strategies and motives.

Instructional implication 1a: Assess components of students' SRL and supply individualized feedback. Artino & Stephens (2006) have suggested that "online instructors, challenged with having to discern students' engagement with online materials in the absence of traditional classroom cues (e.g., facial gestures, fidgeting, non-attendance), may be able to utilize a survey...as a diagnostic tool" (p. 180). For instance, an instructor could administer a SRL survey early in an online course to assess which students are likely to have adaptive motivational attributes and, therefore, are also likely to use effective SRL strategies. Two popular surveys have been used in traditional classrooms and can be easily modified for online settings: the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1993) and the Learning and Strategies Study Inventory (LASSI; Weinstein, Schulte, & Palmer, 1987).

In addition to using survey results to inform their own instructional practices, online teachers can interpret these results; provide individualized feedback to their students regarding their strengths and weaknesses; and refer students to additional resources for guidance on how to improve their deficiencies (Cennamo, Ross, & Rogers, 2002). Using these proactive techniques, instructors can know early in an online course which students are likely to

need more help regulating their cognition, motivation, and behavior. In doing so, both instructors and students will be in better position to promptly address those weaknesses.

Instructional implication 1b: Provide students with differential support. As suggested by Artino and Stephens (2007), online instructors, tasked with teaching both undergraduate and graduate courses, should consider providing their developmentally distinct audiences with differential support; that is, “different types and amounts of regulatory guidance and scaffolding during online learning activities” (p. 5). For instance, undergraduates may require more explicit support and structure from the instructor in the form of (a) reflective prompting aimed at helping them self-monitor their understanding (Davis & Linn, 2000); (b) clearer and more detailed syllabi, assignment instructions, and grading rubrics to assist them in goal setting and self-evaluation (Ley & Young, 2001); and (c) more intermediate assignment deadlines to facilitate their progression toward task completion (Liu, Bonk, Magjuka, Lee, & Su, 2005). In general, these instructional tactics are designed to encourage online learners with less-developed SRL beliefs and behaviors to better regulate their own learning activities (McLoughlin, 2002) and to discourage their use of maladaptive academic behaviors, such as procrastination (Artino & Stephens, 2007).

Finding 2: Students’ Motivational Beliefs, Such as Self-Efficacy and Task Value, Matter

Bandura (1986) defined self-efficacy as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). According to Schunk (2005), self-regulated learners tend to have higher self-efficacy for learning than students with less-adaptive SRL profiles. With this in mind, several investigations have studied self-efficacy and its relations to other important variables in online contexts. Overall, results have revealed that when compared to their counterparts with lower perceived self-efficacy, efficacious students report more use of cognitive and metacognitive learning strategies (Artino & Stephens, 2006; Joo, Bong, & Choi, 2000), greater satisfaction with their learning experience (Artino, 2007a, in press; Lim, 2001), increased likelihood of enrolling in future online courses (Artino, 2007a; Lim 2001), and superior academic performance (Bell & Akroyd, 2006; Hsu, 1997; Joo et al., 2000; Lee, 2002; Lynch & Dembo, 2004; Wang & Newlin, 2002).

Research in traditional classrooms also suggests that learners’ task value beliefs (i.e., the extent to which they find a task interesting, important, and useful; Eccles & Wigfield, 1995) relate positively to their use of SRL strategies (e.g., rehearsal, elaboration, organization). In fact, Schunk (2005) concluded that “students with greater personal interest in a topic and those who view the activity as important or useful are more likely to use adaptive self-regulatory strategies” (p. 87). Over the past decade, a handful of researchers have attempted to use task value as a predictor of adaptive academic outcomes in online settings. In general, results have shown task value beliefs to be positively related to students’ use of cognitive and metacognitive learning strategies (Artino & Stephens, 2006; Hsu, 1997), overall satisfaction (Artino, in press; Lee, 2002), and future enrollment choices (Artino, 2007a).

Instructional implication 2a: Develop and support students’ self-efficacy. Online instructors can help students build and maintain their self-efficacy for learning by using various instructional strategies. Although many strategies have been shown to enhance students’ self-efficacy and improve motivation and learning in both traditional and online contexts, two specific approaches are suggested here. First, online instructors can help learners identify and set challenging, proximal goals. When students set realistic goals, they tend to be more motivated to perform than students who are given no goals or who are simply told to try their best (Locke & Latham, 1990). Furthermore, according to Bandura (1997), students who set a goal are likely to experience an initial sense of self-efficacy in their ability to achieve the goal and are also apt to make a commitment to attempt it. As students progress, “they engage in activities that they believe will lead to goal attainment: attend to instruction, rehearse information to be remembered, expend effort, and persist” (Schunk, 1991, p. 213). A second strategy for boosting students’ self-efficacy for learning online is to provide them with timely, honest, and explicit task feedback (Bandura, 1997; Bangert, 2004; Wang & Lin, 2007). Effective feedback from the instructor reveals progress in relation to students’ goals; helps students adjust the level or direction of their effort; and develops students’ self-efficacy beliefs as they experience enactive mastery and observe progression toward goal completion (Bandura, 1997; Locke & Latham, 2002).

Instructors can utilize a number of online tools and techniques to help students with goal setting and goal completion, and to facilitate effective feedback. Several of these online tools and techniques include the following: (a) create detailed online syllabi with hyperlinks to assignment specifications and grading rubrics (Artino & Stephens, 2007), (b) provide intermediate assignment deadlines to facilitate goal progression and task completion (Liu et al., 2005), (c) send frequent emails to communicate goals and provide task feedback (Dabbagh & Kitsantas, 2004), and (d) utilize up-to-date online grade books to encourage self-monitoring and self-evaluation (Dabbagh & Kitsantas, 2005; Whipp & Chiarelli, 2004).

Instructional implication 2b: Clarify task relevance and design online activities that are grounded in authentic problems to generate interest. Teachers can design their online courses in such a way that enhances the extent to which students value the learning tasks, which can ultimately improve motivation and learning (Keller, 1999). For example, by clarifying the relevance of specific learning tasks, instructors help students understand the contribution of coursework to the realization of their personal goals, interests, and values (Assor, Kaplan, & Roth, 2002). Additionally, online instructors can address value and relevance by utilizing authentic, problem-based learning activities (Bransford, Brown, & Cocking, 2000; Woo & Reeves, 2007). As Artino and Stephens (2006) have suggested, “problem-based learning cycles, rooted in contemporary (if not controversial) issues within the field of study, can not only capture students’ immediate interest but can also help them appreciate the larger social, real-world relevance and importance of what they are learning” (p. 180). Although the use of authentic problems is not unique to online education, it is considered by many to be a “best practice” for enhancing motivation and facilitating students’ ability to transfer what is learned to novel problems encountered elsewhere (American Psychological Association [APA], 1997; Bransford et al., 2000). That said, instructors are cautioned to carefully consider the complexity of the problems they employ, as overly complex problems have the potential to quickly overwhelm learners’ working memory capacity and, consequently, can have a negative impact on learning (for a complete review of the limitations of problem-based learning and other types of minimally-guided instruction, see Kirschner, Sweller, & Clark, 2006; Mayer, 2004).

Finding 3: Students Seldom Use Critical Thinking Skills During Online Discussions

For many online courses, group discussions conducted within message boards represent the principal instructional activity (Dabbagh & Kitsantas, 2005). In most cases, the primary goal of these online discussions is to encourage students to challenge, reform, and synthesize their current views of knowledge through in-depth interactions with others (Garrison, Anderson, & Archer, 2001). However, findings from numerous studies of online discussions have indicated that students’ interactions are often quite shallow, and “rarely developed into a higher level of communication where negotiation, co-construction, and agreement occurred” (Tallent-Runnels et al., 2006, p. 100). One possible explanation for students’ shallow participation in online discussions is lack of guidance from the instructor. Thus, as Christopher, Thomas, and Tallent-Runnels (2004) have argued, online instructors, like their counterparts in traditional classrooms, must take greater responsibility for organizing and scaffolding their students’ learning within these online discussions.

A number of recent studies have confirmed the benefits of online self-regulatory scaffolding. Taken together, findings have suggested that (a) scaffolding can be an effective way to support and/or enhance students’ self-regulatory beliefs and behaviors (Azevedo, Cromley, & Seibert, 2004; Dabbagh & Kitsantas, 2005; Kauffman, 2004; Niemi et al., 2003); (b) adaptive scaffolding (i.e., a teacher or tutor who continuously diagnoses student understanding and provides timely content and process-related scaffolding) is more effective in supporting the development of students’ conceptual understanding and use of deep processing strategies than fixed scaffolding conditions (i.e., a generic list of learning goals; Azevedo et al., 2004); and (c) scaffolding is more effective for novice learners with under-developed self-regulatory beliefs and behaviors than for veteran learners (Niemi et al., 2003).

Instructional implication 3: Scaffold online discussions. Supplemental scaffolding in online contexts has been described by some as enhanced *teaching presence* (Anderson, Rourke, Garrison, & Archer, 2001; Garrison et al., 2001; Shea, Li, Swan, & Pickett, 2005). For example, during online discussions, enhanced teaching presence might include some of the following teacher behaviors: (a) set the climate for learning by modeling appropriate discussion posts; (b) focus the discussion on specific issues; (c) encourage, acknowledge, and reinforce student contributions; (d) identify areas of agreement/disagreement and seek consensus and understanding; (e) add information from diverse sources to a string of student posts; (f) critically evaluate posts and request clarification and elaboration where necessary; and (g) diagnose and correct students’ misunderstandings (Anderson et al., 2001; Shea et al., 2005). Moreover, providing students with explicit discussion prompts (Hara, Bonk, & Angeli, 2000; Spatariu, Hartley, Schraw, Bendixen, & Quinn, 2007) and clear grading criteria (Rovai, 2003) has been shown to improve the quality of online discussions and encourage more in-depth student interactions.

Finding 4: Students Who Collaborate and Seek Help from Others Tend to Experience Greater Success

Many models of academic self-regulation support the idea of external regulation from teachers and peers as they provide modeling of and scaffolding for regulatory behaviors (Boekaerts et al., 2000; Puustinen & Pulkkinen, 2001). Thus, although it may seem paradoxical, enabling students to become highly self-regulated may require “putting individuals in learning situations with certain degrees of other-regulation” (Kollar & Fischer, 2006, p. 426). Furthermore, research in traditional classrooms has revealed that high achieving students with well-developed self-

regulatory beliefs and behaviors tend to make use of their teachers and peers as social supports (Zimmerman & Martinez-Pons, 1986).

Other-regulation from teachers and peers may be even more important in online contexts where students do not have the luxury of face-to-face interactions during weekly classroom meetings (Dabbagh & Kitsantas, 2004, 2005). For example, in a case study that explored how graduate students used and adapted traditional SRL strategies to complete online tasks, Whipp and Chiarelli (2004) found that students “used the continuous feedback of their peers to make judgments about the quality of their own work” (p. 15). Additionally, students reported that the constant presence of the teacher and peers in the online discussion forums added incentive for continued participation in the discussions. Some students even commented that toward the end of the semester, when online discussions were no longer required, their motivation to stay engaged waned. One student stated, “I depended on the interaction with other students to keep myself motivated, and when that wasn’t there, my motivation dropped a lot” (Whipp & Chiarelli, 2004, p. 16). Finally, results from this case study revealed some variations of traditional help-seeking and peer assistance behaviors that were specific to the online context. For example, several students discussed how they regularly used their peers’ online discussion posts to plan and shape their own work (Whipp & Chiarelli, 2004).

Instructional implication 4: *Utilize peer models and encourage collaboration and co-regulation.* In an online environment, external regulation from teachers and peers appears to be particularly important. Therefore, online instructors should consider facilitating social modeling, collaboration, and so-called other- or co-regulation (Corno & Randi, 1999; Kollar & Fischer, 2006). For example, instructors can promote social modeling in several ways, including the following activities: (a) model appropriate discussion posts, (b) explicitly acknowledge and reinforce well-written posts, and (c) provide students with samples of exemplary assignments. Additionally, by utilizing collaborative assignments and requiring students to work together toward a mutual goal, online instructors can encourage students to provide regulatory support for one another in the form of project planning, monitoring, and reflecting (Winters & Azevedo, 2005).

Of course, it is worth noting that simply placing students in groups does not guarantee collaboration and co-regulation (Johnson & Johnson, 1999). Instead, the learning environment must be intentionally designed to promote effective group behaviors and to discourage maladaptive activities such as free-riding and social loafing (Kreijns, Kirschner, & Jochems, 2003). Although a discussion of specific techniques for promoting effective collaboration is beyond the scope of this article, these instructional methods have been detailed elsewhere in the computer-supported, collaborative learning literature (see, for example, Artino, 2004; Hiltz, 1997; Johnson & Johnson, 1999; Kreijns et al., 2003).

Final Thoughts

Over the last 10 years, numerous studies have used social cognitive views of self-regulation to understand the characteristics of successful online learners. Overall, the existing empirical literature supports well-established findings from research in more traditional classrooms; specifically, that academic self-regulation is important, if not essential, for effective learning and performance (Artino, 2007b; Hodges, 2005; Miltiadou & Savenye, 2003; Schunk & Zimmerman, 1994, 1998).

The purpose of this article was to provide online instructors with a set of practical, empirically-based guidelines that have emerged from these recent studies. Table 1 provides a summary of the four primary findings that were culled from the literature, along with their instructional implications. Table 1 also includes several online tools and techniques that instructors can use to implement the recommendations provided here. It is important to note, however, that the empirical findings reported in this article, and the instructional implications that follow, are not necessarily unique to online learning and teaching. In fact, most of the instructional recommendations provided here are equally applicable for promoting student motivation and learning in traditional, face-to-face contexts (APA, 1997; Bransford et al., 2000). Ultimately, however, online teachers who read this article should be convinced that to facilitate engaging and effective *online* instruction, they must first consider and explicitly address their learners’ academic motivation and self-regulation.

Author Note

The first author is a military service member. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.

Table 1
Summary of Key Findings, Instructional Implications, and Online Tools/Techniques for Implementation

Finding	Implication	Online Tools & Techniques
1. The quality and quantity of students' self-regulatory beliefs and behaviors vary greatly; those with more adaptive profiles experience greater success	1a. Assess components of students' self-regulated learning and supply individualized feedback	Utilize online surveys to assess self-regulated learning skills (e.g., online versions of the Motivated Strategies for Learning Questionnaire [MSLQ] or the Learning and Strategies Study Inventory [LASSI]) Interpret survey results, provide individualized feedback, and supply links to additional Web resources for tips on improving deficient self-regulated learning skills
	1b. Provide students with differential support	Send reflective prompts via email and/or course management systems to encourage self-monitoring Create detailed syllabi, assignment instructions, and grading rubrics to assist with goal setting and self-evaluation Use intermediate assignment deadlines to facilitate progression toward task completion
2. Students' motivational beliefs, such as self-efficacy and task value, matter	2a. Develop and support students' self-efficacy	Help students identify and set challenging, proximal goals Send frequent emails and/or utilize course management systems to provide students with timely, honest, and explicit performance feedback Utilize up-to-date online grade books to encourage self-monitoring and self-evaluation
	2b. Clarify task relevance and design online activities that are grounded in authentic problems to generate interest	Tell students how specific learning tasks will contribute to the realization of their personal goals, interests, and values Employ problem-based learning cycles rooted in authentic issues to enhance motivation and facilitate transfer; however, carefully consider the complexity of problems and their potential to overwhelm students' working memory capacity
3. Students seldom use critical thinking skills during online discussions	3. Scaffold online discussions	Model appropriate discussion posts that are focused on the specific issues/concepts under consideration Encourage, acknowledge, and reinforce student contributions Identify areas of agreement/disagreement and seek consensus and understanding Add information from diverse sources and critically evaluate student posts Provide explicit discussion prompts and clear grading criteria
4. Students who seek help from others and collaborate experience greater success	4. Utilize peer models and encourage collaboration and co-regulation	Model appropriate discussion posts and explicitly acknowledge and reinforce other students' well-written posts Provide samples of exemplary assignments Utilize group projects that encourage students to work together toward a mutual goal

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